

REMARKS

The amended claim 1 is based on previous claims 1, 25 and 44. Accordingly no new matter is introduced as a result of this amendment.

Claims 25 and 44 have been cancelled.

Moreover, claims 2-24 have been amended to be directed to chewing gum, and the dependencies affected by the amendments have been corrected.

Rejection under 35 U.S.C. § 102

The Examiner rejected claims 1-16, 23-27, 30-42, 44-50, 55, and 57-64 under 35 U.S.C. 102(b) as being anticipated by GOLDBERG (WO 01/47368, pages 4-7, 9-15, 17, 19, 42) as set forth in paragraph no. 6, Paper no. 20080227. This rejection is respectfully traversed.

With the present amendments, the rejection of claim 1 under 35 U.S.C 102(b) should now have been overcome.

When reading GOLDBERG (WO 01/47368), it is found that a chewing gum substantially free of non-biodegradable polymers has not been disclosed anywhere therein.

On the contrary, GOLDBERG discloses:

"Apart from the degradable copolymers...the composition of the gum base is not critical... The composition of the gum bases of the present invention can vary depending upon factors known in the art such as, for example, the type of base desired, e. g., bubble gum, the consistency of gum desired, e. g., hard or soft..... Illustrative examples of suitable polymers in gum bases include both natural and synthetic elastomers and rubbers such as, for example, elastomers of vegetable origin such as chicle, natural rubber, crown gum, nispero, rosadinha, jelutong, perillo, niger gutta, tunu, balata, gutta-percha, lechi capsii, sorva, gutta kay, mixtures thereof, and the like, and synthetic elastomers such as butadiene-styrene copolymers, polyisobutylene, isobutylene-isoprene copolymers, polyethylene, mixtures thereof, and the like.

Suitable gum bases may also include a synthetic thermoplastic polymer, such as, for example, polyvinyl acetate and its partial hydrolysate, ethylene vinyl acetate, polyvinyl alcohol, and mixtures thereof and the like. When utilized, the molecular weight of the thermoplastic polymer typically is in the range of from about 2, 000 to about 100, 000 grams per gram mole ("g/gmol"). (Goldberg, p.4, 2nd and 3rd paragraph)

As it appears, gum bases are according to Goldberg prepared from various conventional non-biodegradable polymers. According to Goldberg, gum bases of his invention should contain the degradable polymers, but apart from that the rest of the composition is not critical, and a long list of suitable conventional non-biodegradable polymers is included. A single specific example of a gum base is also included in Goldberg:

"A gum base composition is prepared with the following ingredients:

<i>INGREDIENTS</i>	<i>PERCENT BY WEIGHT</i>
<i>Copolymer of Example 9</i>	<i>20.00</i>
<i>Butyl Rubber</i>	<i>2.00</i>
<i>Polyisobutylene</i>	<i>6.00</i>
<i>Polyvinyl Acetate</i>	<i>23.75</i>
<i>(MW=12,800 g/gmol)</i>	
<i>Polyvinyl Acetate</i>	<i>31.50</i>
<i>(MW=47,000)</i>	
<i>Glycerol Triacetate</i>	<i>6.75</i>
<i>Calcium Carbonate</i>	<i>10.00"</i> (Goldberg, Example 48)

The specific example supports the general description, as a copolymer of the invention (BEPD adipate caprolactone copolymer) is applied in a gum base along with several conventional chewing gum polymers, i.e. butyl rubber, PIB, and two polyvinyl acetates.

Nowhere in GOLDBERG, can a disclosure of a chewing gum comprising a degradable polymer and being substantially free of conventional non-biodegradable polymers be found.

It is therefore respectfully submitted that the amended claim 1 is not anticipated by GOLDBERG under 35 U.S.C. §102(b).

Rejection under 35 U.S.C. § 103

The Examiner rejected claims 17-20, 28, and 29 under 35 U.S.C. 103(a) as being unpatentable over GOLDBERG as set forth in paragraph no. 7, Paper no. 20080227. The Applicants respectfully traverse this rejection.

With the present amendments, the rejection of claim 1 under 35 U.S.C 103(a) should now have been overcome.

At the time of the invention, if a person of ordinary skill in the art were confronted with the problem of providing a degradable chewing gum polymer having properties comparable to those of conventional chewing gum elastomers and incorporating that polymer in a chewing gum formulation, the skilled person could look into GOLDBERG (WO 01/47368) as GOLDBERG is entitled "Degradable copolymers for chewing gum base".

If a person of ordinary skill in the art consulted GOLDBERG, he would find the teaching that gum bases comprising degradable copolymers can be prepared. Moreover, the skilled person would learn that certain benefits could be obtained by introducing degradable polymers in gum bases: GOLDBERG teaches that gum bases containing the degradable polymers after being chewed can become brittle, easily break up and adhere less to surfaces (Goldberg, page 4, first paragraph).

As regards the degradable polymers as such, GOLDBERG does not address the problem of providing polymers having properties comparable to those of conventional chewing gum elastomers. Instead, GOLDBERG provides long lists of monomers mentioning practically all monomers imaginable in the context of degradable polymers, but without pointing out any direction to follow in order to obtain polymers particularly suitable for chewing gum or for that

matter suitable as chewing gum elastomers (Goldberg, page 9, last paragraph to page 14, first paragraph and page 15, last paragraph to page 16, second paragraph).

Consequently, a vast number of combinations are possible but the burden of actually providing and then testing through all these in a chewing gum context would be left on the reader, i.e. the person of ordinary skill in the chewing gum art. Obviously, the properties of the many different polymers would be very different, but which ones would be more suitable for chewing gum than others, and which ones would have elastomeric or resinous properties, and which ones would be suitable in a chewing gum actually based on degradable polymers, i.e. being substantially free of non-biodegradable polymers? Goldberg is silent as regards these issues. Also, it should be noted that GOLDBERG does not in any way teach, suggest or motivate the skilled person to perform such tests. On the contrary, according to GOLDBERG it is clear that combining any one of the suggested first monomers with any one of the suggested second monomers should result in degradable copolymers from which the desired benefits would be obtained when included in any conventional gum base (Goldberg, page 4, all paragraphs, and page 15, third paragraph, and page 17, first paragraph).

Therefore, nothing in GOLDBERG would lead a person of ordinary skill in the art to provide a degradable chewing gum polymer having properties comparable to conventional chewing gum elastomers and even if he or she tried to do so, there would be no hints in GOLDBERG leading to prepare the degradable polymer specifically from at least one tri- or higher functional initiator and at least two different monomers forming the backbone of the polymer, one of which being a carbonate.

Moreover, as regards the incorporation of the degradable polymer in a chewing gum formulation, it is clear from GOLDBERG that *“Apart from the degradable copolymers of the present invention, the composition of the gum base is not critical to the present invention”* (Goldberg, page 4, second paragraph). From this statement using the wording *“not critical”* and from the context on page 4 and the rest of GOLDBERG it is understood that any known gum base composition can be used, but now with the addition of the degradable copolymers. By including a long list of conventional polymers referred to as suitable (as quoted previously herein), it is emphasized by GOLDBERG that the desired chewing gum is obtained from a combination of the degradable polymer and some of the conventional polymers. Again, this is emphasized by example 48 in which a gum base composition is provided as quoted previously herein. In example 48, conventional non-biodegradable conventional polymers constitute 63.25 percent by weight of the gum base which also corresponds to 76% of the total polymer content in the gum base. On the basis of GOLDBERG, a person of ordinary skill in the art would clearly be lead to apply multiple conventional polymers constituting a major part of the gum base and could find no indications that the conventional non-biodegradable polymers could be expendable. Since GOLDBERG consistently shows that conventional non-biodegradable polymers are part of the gum base, a person of ordinary skill in the art would expect that failing to apply these conventional polymers would result in a poor quality and/or texture of the final chewing gum. Therefore, it would not be obvious for a person of ordinary skill in the art to apply the degradable polymers in a chewing gum being substantially free of non-biodegradable polymers.

In the light of the above, it is respectfully submitted, that it would be non-obvious for a person of ordinary skill in the art to provide a degradable polymer from at least one tri- or higher functional initiator and at least two different monomers forming the backbone of the polymer,

one of which monomers being a carbonate and incorporating this degradable polymer in a chewing gum being substantially free of non-biodegradable polymers, as stated in the amended claim 1.

But this is indeed what has been invented according to the present application. Just taking any coincidental combination of first and second monomers according to GOLDBERG would not very likely result in advantageous chewing gum properties, but applying the initiator and monomers as set forth by the present invention in amended claim 1 would result in advantageous properties of the obtained degradable polymer and chewing gum, which is substantially free of non-biodegradable polymers. Advantages of the invention are stated in the description; inter alia, in paragraphs [0013] - [0016] and [0054]:

[0013] According to the invention, the obtained polymer has elastomeric properties suitable for chewing gum.

[0014] According to the invention, a polymer structure being very suitable as chewing polymer/elastomer has been obtained.

[0015] According to the invention it has been realized that a certain degree of branching of the backbone is needed to obtain a final improved performance, when the polymer, preferably the elastomer, is incorporated in a chewing gum. It has moreover been realized that the obtained branching needs to be carefully controlled in order to avoid too much branching-induced crosslinking.

[0016] According to the invention, it has surprisingly been realized that this balance between branching/cross-linking may be controlled by a suitable pairing of initiator and carbonate monomer. Such pairing includes among the most significant "control knobs" the mutual concentration of the initiator versus the carbonate monomer.

[0054] Moreover, it has been realized that an increase in the functionality of the initiator results in an improved texture and/or improved release of chewing gum ingredients when the polymer is incorporated in a chewing gum.

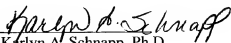
Double Patenting Rejection

The Examiner has provisionally rejected claims 1-64 on the grounds of non-statutory obviousness-type double patenting as being un-patentable over claims 1-62 of co-pending Application No. 10/472,122; claims 1-54 of co-pending Application No. 10/472,154; claims 1-67 of co-pending Application No. 10/528,926; claims 1-7 and 10-57 of co-pending Application No. 10/528,927; claims 1-20, 22-26, and 28-42 of co-pending Application No. 10/529,133; claims 1-55 of co-pending Application No. 10/529,137; and claims 1, 2, 10, 11, 13-18, 24-26, and 28-54 of co-pending Application No. 11/088,109; each set of claims being in view of GOLDBERG.

Upon indication of allowable subject matter in this case, Applicants will file the appropriate terminal disclaimers in order to overcome these rejections.

Based on the foregoing, all pending claims are in a condition for allowance. Accordingly, Applicant respectfully requests reconsideration and an early notice of allowance. Should the Examiner wish to discuss the amendments or arguments made herein, Applicant invites the Examiner to contact the undersigned at (513)651-6865 or via e-mail at kschnapp@fbtlaw.com.

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I hereby certify that this correspondence is being electronically filed with The Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, this 3rd day of March 2009.

A handwritten signature in cursive script, reading "Eileen Andrews", is written over a horizontal line.

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